2774 $

12/Appeal Brief
9-23-98
NP

Serial No. 08/518,051 Navy Case No. 74023

Eric James Whitesell
SPAWARSYSCEN SAN DIEGO, CODE D0012
53510 Silvergate Avenue
San Diego, CA 92152-5765
(619)553-3001

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO:

COMMISSIONER OF PATENTS AND TRADEMARKS
WASHINGTON, DC 20231

ON 24 August 1998
DATE

BY Linda B Brady
DEPOSITOR

Linda B Brady
SIGNATURE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No:	08/518,051	Examiner:	Amare Mengistu
Filing date:	August 22, 1995		
Appellants:	Stephen D. Russell, et al	Art Unit:	2774

Title: PROGRAMMABLE GRAY-SCALE LIQUID CRYSTAL DISPLAY

Commissioner of Patents and Trademarks
Washington, DC 20231

APPEAL BRIEF

Sir:

Appellants hereby submit this appeal brief under 37 CFR §1.192 appealing the final rejection of claims 1-11 by Paper No. 8 dated April 2, 1998.

Real Party in Interest

The real party in interest in the subject application is the Government of the United States of America as represented by the Secretary of the Navy.

Related Appeals and Interferences

No related appeals or interferences are known to Appellants.

Status of Claims

Pending claims 1-11 stand finally rejected as follows:

Claims 1-3, 6, 10, 11 were rejected under 35 USC §102(b) as being anticipated by admitted prior art;

Claims 4, 5, 8, and 9 were rejected under 35 USC §103(a) as being unpatentable over admitted prior art in view of Johary et al (5,196,839); and

Claim 7 was rejected under 35 USC §103(a) as being unpatentable over admitted prior art in view of Kobayashi et al (5,680,185).

Status of Amendments

Appellants filed a proposed amendment including drawing changes to Figs. 3A and 4 on April 29, 1998 subsequent to the final rejection of claims 1-11 in Paper No. 8. Paper No. 10 indicated that the objections to the drawings were withdrawn and that the proposed amendment would be entered upon filing of an appeal.

Summary of Invention

The present invention is a simple but novel and unobvious liquid crystal display device that may be programmed to provide a high-resolution gray-scale display. A typical embodiment shown in Figs. 3A and 4 comprises a polarizer 16 for coupling to a source 22 of a beam of light to polarize the beam of light with respect to a polarization angle. A pixel sequence comprising multiple pixels aligned collinearly along the beam of polarized light passing through optically coupled independent liquid crystal display media 10 varies the polarization angle of the beam of light. An analyzer 17 is coupled to multiple liquid crystal display pixels 40 for passing a gray-scale portion of the beam of polarized light as a function of the polarization angle. By appropriately programming the voltage applied to each pixel in one of the independent liquid crystal displays in the pixel sequence, the percentage of light transmitted may be adjusted for each independent liquid crystal display 10 constituting the pixel sequence.

Issues on Appeal

1. Whether claims 1-3, 6, 10, 11 are anticipated under 35 USC §102(b) by admitted prior art;

2. Whether claims 4, 5, 8, 9 are unpatentable under 35 USC §103(a) over admitted prior art in view of Johary et al (5,196,839); and

3. Whether claim 7 is unpatentable under 35 USC §103(a) over admitted prior art in view of Kobayashi et al (5,680,185).

Grouping of Claims

Unless otherwise indicated, the claims are separately patentable, and do not stand or fall together. They are separately patentable for the reasons given below.

Argument

Issue 1: Whether claims 1-3, 6, 10, 11 are anticipated under 35 USC §102(b) by admitted prior art

The Examiner's Argument

Claims 1-3, 6, 10, 11 were rejected under 35 USC §102(b) as being anticipated by admitted prior art. The rejection alleges on page 3 of Paper No. 8 that the admitted prior art shown in Figs. 1-3 discloses the claimed pixel sequence aligned collinearly along the beam of light. The rejection further alleges on page 5 of Paper No. 8 that there is no support in the specification for the limitation of collinear alignment for the claimed pixel sequence. The rejection further alleges that the word "collinear" used in the claim language may be defined as "in or sharing, the same straight lines as two points or plane" and that according to this definition claims 1-3, 6, 10, 11 read on the admitted prior art shown in Figs 1-3.

Response To Examiner's Argument

The rejection errs in alleging that the admitted prior art shown in Figs. 1-3 discloses the claimed multiple liquid crystal display pixels aligned collinearly along the beam of polarized light. The prior art shown in Figs. 1-3 discloses a single liquid crystal display medium 10 aligned collinearly along the beam of polarized light. As shown in Figs. 3A and 4, multiple liquid crystal regions 10 are serially arranged in collinear alignment with the beam of polarized light. The beam of polarized light defines a line between a pixel in the first liquid crystal region 10 and a pixel in the second liquid crystal region 10. There are therefore two pixels in this example that lie on the same straight line defined by the beam of polarized light passing through liquid crystal media 10. Because Figs. 1-3 of the prior art disclose only a single liquid crystal region 10 lying on the same straight line as the polarized beam of light, the claimed pixel sequence comprising multiple liquid crystal display pixels aligned collinearly along the beam of polarized light recited in claims 1-3, 6, 10, 11 is not anticipated under 35 USC §102.

The rejection further errs in alleging that the specification lacks support for the limitation of collinear alignment of the claimed pixel sequence. Support for the limitation of collinear alignment along the beam of polarized light for the claimed pixel sequence may be found in the specification on page 9, lines 19-23, as the "serial arrangement of pixels in optically coupled independent displays." The term

"serial arrangement" is an alternative expression for the series or sequence of display regions 10 shown in Fig. 4. Further support for the claimed pixel sequence may be found on page 11, lines 14-15 describing pixel elements "serially aligned to form pixel sequences". The portions of the specification mentioned above describe a serially aligned pixel sequence in optically coupled independent displays. The terms "optically coupled" and "serially aligned" in the specification describing the claimed pixel sequence in optically coupled independent displays as shown in Figs. 3A and 4 clearly support the limitation of collinearity with the claimed beam of polarized light.

The rejection further errs in alleging a definition for "collinear" that is grammatically vague and not commonly understood. The definition alleged on page 5 of the rejection to come from Webster's New World Dictionary quoted as "in or sharing, the same straight lines as two points or plane" simply does not make sense. Webster's New Collegiate Dictionary defines collinear as "lying on or passing through the same straight line", not plural "lines". In claims 1-3, 6, 10, 11 the limitation "collinear along the beam of polarized light" means that the claimed multiple pixels of the claimed pixel sequence lie on the same straight line as the beam of polarized light. Because the prior art does not disclose multiple pixels lying on the same straight line as the beam of polarized light, the claimed pixel sequence does not read on the prior art.

Issue 2: Whether claims 4, 5, 8, 9 are unpatentable under 35 USC §103(a) over admitted prior art in view of Johary et al (5,196,839)

The Examiner's Argument

Claims 4, 5, 8, 9 were rejected under 35 USC 103(a) as being unpatentable over the prior art in view of Johary et al. The rejection argues on page 3 that Johary discloses a gray scale display circuit having programmable display drivers and on page 5 that "Johary's gray scale control is collinearly aligned to pixels".

Response To Examiner's Argument

The rejection errs in confusing the limitations of claims 4, 5, 8, 9. Specifically, the claimed pixel sequence comprises multiple liquid crystal display pixels collinearly aligned along the beam of polarized light and a gray scale control coupled to at least one pixel of the pixel sequence. Appellants are not claiming the gray scale control collinearly aligned to pixels at issue in the rejection. Because the premise of the rejection is false, its conclusion of obviousness is improper. Further, Johary does not teach or suggest the claimed gray-scale control coupled to at least one pixel of the claimed sequence of pixels collinearly aligned along a beam of polarized light. Because Johary does not teach the claimed gray-scale control in combination with the claimed collinearly aligned pixel sequence, claims 4-5, 8, 9 are not obvious under 35 USC §103.

The rejection further errs in failing to meet the burden required by the PTO to make a *prima facie* case of obviousness. Specifically, MPEP §706.02(j) states:

> **"After indicating that the rejection is under 35 USC §103, the examiner should set forth in the Office action (1) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate, (2) the difference or differences in the claim over the applied reference(s), (3) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and (4) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.**
>
> **To establish a *prima facie* case of obviousness, three basic criteria muat be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."**

The rejection of claims 4, 5, 8, 9 does not set forth the relevant teachings of the prior art relied upon or the differences between the claimed pixel sequence and the Johary reference, it does not propose a necessary modification of Johary to arrive at the claimed subject matter, and it does not explain why one would be motivated by the prior art to make the necessary modification. It is the burden of the examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the teachings or suggestions found in the prior art

or by a reasonable inference contained in such teachings or suggestions. See In re Sernaker, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983). Clearly the rejection does not meet this burden. Because the rejection does not meet the burden of proof under 35 USC §103 as required by MPEP §706.02, the PTO has not established a *prima facie* case of obviousness.

Issue 3: Whether claim 7 is unpatentable under 35 USC §103(a) over admitted prior art in view of Kobayashi et al (5,680,185)

The Examiner's Argument

Claim 7 was rejected under 35 USC §103(a) as being unpatentable over admitted prior art over Kobayashi et al. The rejection argues that because Kobayashi teaches using sapphire for the claimed substrate of the claimed liquid crystal display, it would be obvious to include Kobayashi's sapphire substrate into the devices of the prior art.

Response To Examiner's Argument

The rejection errs because the cited prior art does not teach or suggest the claimed pixel sequence as explained above in Issue 1. The combination proposed by the rejection therefore fails to meet the claimed invention. Because the claimed collinearly aligned pixel sequence is not arrived at by the suggested incorporation of Kobayashi with the cited prior art, claim 7 is not obvious under 35 USC §103.

Respectfully submitted,

Eric James Whitesell

PTO Registration No. 38,657

Appendix

Claims

1. A liquid crystal display, comprising:

a polarizer for coupling to a beam of incident light to polarize the beam of light with respect to a polarization angle;

a pixel sequence coupled to the polarizer comprising multiple liquid crystal display pixels aligned collinearly along the beam of polarized light for varying the polarization angle; and

an analyzer coupled to the polarizer and the pixel sequence to pass a gray-scale portion of the beam of polarized light transmitted from the pixel sequence as a function of the polarization angle.

2. The liquid crystal display of claim 1 further comprising a gray-scale control coupled to at least one pixel of the pixel sequence.

3. The liquid crystal display of claim 1 wherein the pixel sequences are arranged into rows and columns.

4. The liquid crystal display of claim 2 wherein the gray-scale control includes electronically programmable driver and interface circuitry for calibrating the pixel sequence to a gray-scale standard.

5. The liquid crystal display of claim 2 wherein the gray-scale control includes electronically programmable driver and interface circuitry for correcting a failed pixel within the pixel sequence.

6. The liquid crystal display of claim 1 wherein each of the pixels is formed on a transparent substrate.

7. The liquid crystal display of claim 6 wherein the substrate comprises sapphire.

8. The liquid crystal display of claim 1 wherein the pixels are formed in an active matrix liquid crystal display.

9. The liquid crystal display of claim 4 wherein the gray-scale control is programmed to a color having a corresponding gray-scale value.

10. The liquid crystal display of claim 1 wherein the pixels comprise one of nematic, supertwisted nematic, or ferroelectric liquid crystals.

11. The liquid crystal display of claim 2 further comprising:

transparent substrates coupled to the pixels for fabricating the gray-scale control drive circuitry,

transparent pixel electrodes formed in a transparent display region on each of the substrates and coupled to the drive circuitry; and

a liquid crystal material coupled to the transparent display regions.